

Remarks

Claims 1-10, 12-15, and 58-70 remain in this application. Claim 11 and 16-57 have been canceled. Claims 4, 8-9, and 58-60 are withdrawn pending allowance of a linking claim. Claims 61-70 have been added.

Claim 58 was withdrawn from consideration as being directed to a non-elected species. There must be a patentable difference between the species as claimed for election between species to be required. The Applicant acknowledges that the invention claimed in claim 58 is patentable over the invention previously elected, namely the invention claimed in any of claims 1-3, 5-6, 12-13 and 15.

Claim 59 was also withdrawn from consideration as being directed to a non-elected species. The Applicant acknowledges that the invention claimed in claim 59 is patentable over the invention previously elected, namely the invention claimed in any of claims 1-3, 5-6, 12-13 and 15.

Claim 60 was withdrawn from consideration as being directed to a non-elected invention. The Applicant acknowledges that the invention claimed in claim 60 is patentable over the invention previously elected, namely the invention claimed in any of claims 1-3, 5-6, 12-13 and 15.

Claims 1-3, 5-6, 12-13 and 15 were rejected as being unpatentable over Abileah et al. (US5629784, hereinafter "Abileah") in view of Silverstein et al. (US5442467, hereinafter "Silverstein"), and further in view of Jansson et al. (US5365354, hereinafter "Jansson"). The Applicant respectfully disagrees.

Claim 1 recites: "a transparent panel having a backside and an anti-glare front surface configured to diffuse ambient light; and a bulk diffuser disposed between the transmissive display screen and the backside...." The Office Action asserts, (a) that Abileah teaches a transparent glass panel 35, and a diffuser 21, and (b) that the anti-reflective front surface is configured to reduce ambient light. In support of assertion (a), the Office Action refers to column 8, lines 10-15. In support for assertion (b), the Office Action refers to column 14, lines 15-32. However, the text cited for assertion (a) describes a different embodiment than that cited for assertion (b).

In the "glass panel" embodiment supporting assertion (a), element 35 is a glass panel with an AR coating. That glass panel does not have an anti-glare front surface configured to diffuse ambient light. As shown in figure 1(a) of Abileah, the panel 35 has smooth surfaces, and Abileah describes it as having an anti-reflective coating, not a textured surface. Anti-reflective coatings are often composed of transparent thin film structures, with alternating layers of contrasting refractive index. Layer thicknesses are chosen to produce destructive interference in the beams reflected from the many interfaces, and constructive interference in the corresponding transmitted beams. As a thin film, an anti-reflective layer may take on the shape of a supporting surface (as is the case of the embodiment shown in figure 2 of Abileah), but the layer inhibits reflection through destructive interference rather than diffusion. In the glass panel embodiment, both the panel and the anti-reflective coating are shown as a single element which has a smooth surface. As such, it is not configured to diffuse ambient light, and does not satisfy the recitations of claim 1.

In the embodiment supporting assertion (b), element 35 is a thin film. The thin film is not a transparent panel but a thin film layer on the diffuser 21. As such, the embodiment supporting assertion (b), although including a diffuser with an anti-reflective coating, does not include both a diffuser and a transparent panel as claimed.

Abileah discusses the option of using the glass panel figure 1(a), or the thin film of figure 2. It does not teach or suggest utilizing the glass panel of figure 1(a) where the panel includes a surface configured to diffuse ambient light. As such, Abileah does not teach or suggest the use of a display system having "a transparent panel having a backside and an anti-glare front surface configured to diffuse ambient light; and a bulk diffuser disposed between the transmissive display screen and the backside...." Moreover, this inadequacy of Abileah is not overcome by combining Abileah with any of the other cited references. As such, claim 1 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 1 also recites that "the bulk diffuser comprises a diffusive material configured to scatter light within the diffusive material." The Office Action acknowledges that such a diffuser is not taught or suggested by Abileah, but asserts that Jansson teaches such a diffuser having a smooth

top and bottom surface, and that it would be obvious to modify Abileah with the diffuser of Jansson to achieve improved transmission efficiency, uniform brightness, and no visual glare. However, replacing the diffuser 21 of Abilea with a smooth surfaced diffuser would have a significant negative impact on diffusion of ambient light reflected from the surface of the diffuser. More particularly, even if the thin film 35 of Abileah were to be incorrectly viewed as a transparent panel, its use on a smooth surface diffuser would result in the thin film 35 forming a smooth surface corresponding to the smooth surface of the diffuser. With a smooth surface the thin film 35 would not diffuse ambient light in the manner it would with a roughened surface. As a result, the use of a bulk diffuser in place of diffuser 21 of Abileah would render the diffuser 21 and film 35 combination of Abileah unsuitable for its intended purpose, i.e. to decrease both specular and diffused reflections. As such, there is no reason to combine Jansson with Abileah. Moreover, such a combination would not satisfy all of the recitations of claim 1, as such a combination would not include a : "a transparent panel having a backside and an anti-glare front surface configured to diffuse ambient light; and a bulk diffuser disposed between the transmissive display screen and the backside...." Thus, claim 1 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 2 recites in part that "the transmissive display screen comprises a liquid crystal display screen." Although Abileah discusses the use of a liquid crystal display screen, it does not, as previously discussed, teach or suggest the use of such a display screen in combination with "a transparent panel having a backside and an anti-glare front surface configured to diffuse ambient light", and "a bulk diffuser disposed between the transmissive display screen and the backside...." Moreover, this inadequacy of Abileah is not overcome by combining Abileah with any of the other cited references. As such, claim 2 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 3 recites in part that the transparent panel, which has an anti-glare front surface configured to diffuse ambient light, also "comprises a glass panel." The Office Action asserts that the glass panel 35 is such a glass panel. However, as previously discussed, although the glass panel 35 has an anti-reflective coating, the glass panel 35 does not have an "anti-glare front surface configured to diffuse ambient light...." As such, Abileah does not teach or suggest a display

system that includes a glass panel having a backside and an anti-glare front surface configured to diffuse ambient light, and a bulk diffuser is that disposed between a transmissive display screen and the backside of the glass panel. Moreover, this inadequacy of Abileah is not overcome by combining Abileah with any of the other cited references. Thus, claim 3 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 5 recites in part "an anti-reflective layer disposed on the anti-glare front surface" of a transparent panel. Although Abileah does discuss an anti-reflective layer disposed on a roughened surface, that roughened surface is part of the diffuser 21, not a transparent panel separate from the diffuser. As such, Abileah does not teach or suggest a transparent panel having an anti-glare front surface with an anti-reflective layer disposed on that surface in combination with a diffuser and transmissive panel as claimed. Moreover, this inadequacy of Abileah is not overcome by combining Abileah with any of the other cited references. As such, claim 5 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 6 recites in part that "the anti-glare front surface comprises a surface texture." The Office Action asserts that that glass panel 35 of Abileah satisfies this recitation. However, as has been discussed, as a glass panel, the panel 35 does not have the recited texture, and as a thin film, the film 35 is not a transparent panel. Moreover, if the diffuser of Jannson is used in place of the diffuser 21 of Abileah, the thin film 35 would not have the recited texture. As such, claim 6 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 7 includes the recitations of claims 6 and 1, and also recites that "the surface texture comprises a chemically etched surface texture." The Office Action acknowledges that Abileah and Silverstein do not teach or suggest a chemically etched surface, but relies on Varaprasad as making up for that inadequacy. However, the "anti-glare performance" of Abileah results from the roughened surface of the diffuser 21. Whether or not that surface is roughened using etching is moot as the recitation of the claim is that the surface texture of the transparent panel is a

chemically etched surface texture. As such, claim 7 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 10 includes the recitations of claims 6 and 1, and also recites that "the bulk diffuser is configured to reduce undesirable optical effects caused by the surface texture." The Office Action asserts that the combination of Abileah, Sanelle, and Jansson would result in a bulk diffuser configured to reduce undesirable optical effects as claimed, and that applied prior art teaches all that Applicant has disclosed in the instant specification. The Applicant emphatically disagrees. As discussed above, the cited references do not satisfy the recitations of either claim 1 or claim 6, so claim 10 is patentable at least because of its dependence on claims 1 and 6. Moreover, with a roughened surface, the diffuser 21 of Abileah would be a source of the undesirable optical effects the claimed invention overcomes, it would not reduce such effect. Thus claim 10 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 12 recites that the system comprises "an index-matched bond material disposed on opposite surfaces of the bulk diffuser...." As previously discussed, replacing the diffuser 21 of Abileah with a bulk diffuser would have a negative impact on the Abileah display's ability to diffuse ambient light reflection, and it would also prevent Abileah from satisfying the "an anti-glare front surface configured to diffuse ambient light " transmissive panel recitation of claim 1. Moreover, use of index matched bond material disposed on opposite surfaces of a roughened surface diffuser would essentially eliminate the roughened surface of the diffuser and negate any benefit the roughened surface provided. Thus, there is no reason to combine the cited references as proposed, and even if there were a reason to combine the references, the combination would not satisfy the recitations of claim 12. As such, claim 12 is patentable over the cited references, regardless of whether the references are considered individually or in combination.

Claim 15 is similar to claim 12, except that it recites that the bulk diffuser is bonded to both the transmissive display screen and the transparent panel. As such, claim 15 is patentable over the cited references for the same reasons that claim 12 is patentable over the cited references.

Claim 61 recites "the transparent panel comprises a transparent glass panel having a surface textured to diffuse ambient light and having the textured surface coated with an anti-reflective coating." As discussed above, none of the cited references teach or suggest a display system that includes a transparent glass panel, in addition to a bulk diffuser, having a surface textured to diffuse ambient light and having the textured surface coated with an anti-reflective coating. Although Abileah discusses both a glass panel 35 coated with an anti-reflective coating, that panel does not have a surface textured to diffuse ambient light. Claims 64

Claim 62 recites "the bulk diffuser is positioned between, and bonded to, both the liquid crystal display screen and the transparent glass panel; and the bulk diffuser is bonded to a surface of the anti-glare front layer opposite the textured surface using an index matched epoxy." None of the cited references teaches or suggests, individually or in combination, a display system having an LCD, a bulk diffuser, and a transparent glass panel where the glass panel has a roughened surface coated with an anti-reflective coating, let alone a system having such bulk diffuser bonded between the LCD screen and the transparent glass panel. Claims 65

Claim 63 recites "a plurality of elongated lamps positioned behind the liquid crystal display screen; a diffuser screen positioned between the liquid crystal display screen and the plurality of elongated lamps; and a reflector panel positioned behind the plurality of elongated lamps." None of the cited references teach or suggest a display system satisfying all the recitations of claims 1, 2, 61, and 62, that also includes another diffuser on an opposite side of the liquid crystal display screen as well as the lamps and reflector panel as claimed. Claims 66

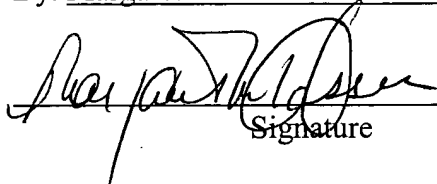
Claims 64-70 include recitations similar to those of claims 61-63 that are not taught or suggested by the cited references, and are patentable at least because of those recitations, and because they depend on patentable base claims.

It is believed that the case is now in condition for allowance, and an early notification of the same is requested.

If the Examiner believes that a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed telephone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on May 25, 2004.

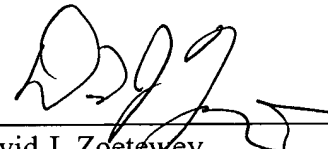
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Signature

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Very truly yours,

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